FACULTY OF SCIENCE

B.Sc. I Year (PRACTICAL) Examination

Subject: Electronics
Paper – I

QUESTION BANK

W.E.F. Annual 2009

Time : 3 Hours Max. Marks : 50

N. B. : Candidate may be asked to strike off any one question (among the allotted EIGHT experiments for the batch) which he/she doesn't wish to attempt. ***ANY ONE EXPERIMENT MAY BE ALLOTTED FROM THE REST OF THE SEVEN EXPERIMENTS.***

1. Using the cathode ray oscilloscope, determine the peak voltage and frequency of a sine, square and triangular signal.

2. By observing the different wave shapes on a CRO screen, determine all the possible parameters of the wave shapes.

3. By proper adjustments to the CRO, obtain Lissajous figures of various shapes to determine the frequency and phase angles between the waveforms.

4. Verify Thevenin's theorem for given three different dc circuits.

5. Verify Norton's theorem for given three different dc circuits.

6. Verify the Maximum Power Transfer theorem for three different sources.

7. Design and construct a low pass RC circuit and study its frequency response, also verify the cutoff frequency both theoretically and experimentally at least for two different RC combinations.

8. Design and construct a high pass RC circuit and study its frequency response, also verify the cutoff frequency both theoretically and experimentally for two different RC combinations.

9. Design and construct two different low pass RL circuits and study their frequency response, also verify the cutoff frequencies both theoretically and experimentally.

10. For a high pass RL circuit, find the cutoff frequency experimentally by plotting its frequency response and repeat the same for different R and L values. Compare these values with theoretically calculated cutoff frequencies.

11. Using a differentiating circuit which is constructed with R and C components, study the response to an applied square wave and measure the time constant of the output signal.

12. Design and construct an RC integrator circuit and observe the output for different input waveforms and verify the time constant of the output signals.

13. Design and construct two RL integrator circuits and calculate their time constants for the combinations from their response for a square input.

14. By constructing a differentiator circuit with R and L components, study its response to a square wave input and determine the circuit time constant. Repeat the same for second R and L combination.

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15. Construct an LCR series resonance circuit to determine its resonance frequency, bandwidth and quality factor by plotting the frequency response. Repeat the same for another LCR series combination.

16. For an LCR series resonance circuit, plot a graph between frequency and current in the circuit. From this graph determine the resonance frequency, bandwidth and quality factor. Repeat the same for another LCR series combination.

17. Construct LCR series resonance circuits for Q values of 10 and 20 and determine their resonance frequency and bandwidth by plotting the frequency response.

18. Draw the voltage-current characteristics of a Junction diode in both forward and reverse bias conditions. From the characteristics determine cut-in voltage, forward resistance and reverse resistance.

19. Determine the Zener breakdown voltage of a given Zener diode by plotting its voltage-current characteristics.

20. Design and construct a Zener voltage regulator with given specifications.

21. Determine the h-parameters of a bipolar junction transistor by plotting input and output characteristics in its CE configuration.

22. Obtain the FET parameters from its voltage-current characteristics in its CS configuration.

23. Mark the negative resistance region on UJT voltage-current characteristics and determine its various parameters.

24. Construct a relaxation oscillator using a UJT and determine its frequency.

25. Plot the voltage-current characteristics of a silicon controlled rectifier and represent various parameters of the device on the graph.

26. Plot the characteristics of LDR and solar cell.

27. Plot the characteristics of Photodiode and LDR.

28. Plot the characteristics of Phototransistor and solar cell.

29. Plot the characteristics of Solar cell and photodiode.

30. Plot the characteristics of photodiode and phototransistor.

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